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November 16, 2000

STL SACRAMENTO PROJECT NUMBER: G0J300145

Rae Mindock
RMT Inc.
222 S Riverside Plaza
Suite 820
Chicago, IL 60606-5901

Dear Ms. Mindock,

This report contains the analytical results for the sample received under chain of custody by STL Sacramento on 10/30/00. This sample is associated with your Riverdale Chemical Co. project.

The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916)374-4408.

Sincerely,

Kathy Gill

Kathy Gill
Project Manager

Project name	<u>Riverdale</u>
Project number	<u>457201</u>
	<u>TECH</u>

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CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G0J300145

SOLID, 8280, Dioxins/Furans, HRGC/LRMS

The associated Method Blank has recovery of ¹³C-OCDD below the method control limits. Generally, data quality is not considered affected if internal standard signal-to-noise is greater than 10:1, which is achieved for all internal standards in this sample. The MB has no detectable concentration for OCDD and the Laboratory Control Sample is within control limits for all compounds.

The LCS has high recovery of the HpCDF internal standard. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated internal standard recoveries. The LCS also has the spike compound PeCDF recovery above the control limits and the field sample has high recovery of HpCDF internal standard. There are no positive concentrations detected for PeCDF or HpCDF and thus there is no effect on the data.

There were no other anomalies associated with this project.

STL Sacramento
Quality Control Definitions

QC Parameter	Definition
QC Batch	A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots.
Duplicate Control Sample (DCS)	Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD.
Duplicate Sample (DU)	A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch.
Laboratory Control Sample (LCS)	A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked.
Method Blank (MB)	A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps.
Surrogate Spike	Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process.

Source: STL Sacramento® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

Sample Summary

G0J300145

<u>WO#</u>	<u>Sample #</u>	<u>Client Sample ID</u>	<u>Sampling Date</u>	<u>Received Date</u>
DN2TN	1	DSL13	10/26/00 09:45 AM	10/30/00 09:20 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight



LOT RECEIPT CHECKLIST

STL Sacramento

CLIENT RMT PM KG LOG# 6246

LOT# (QUANTIMS ID) 605300145 QUOTE# 38342 LOCATION WIA

DATE RECEIVED <u>10-30-00</u>		TIME RECEIVED <u>0920</u>		Initials	Date
DELIVERED BY	<input checked="" type="checkbox"/> FEDEX	<input type="checkbox"/> CA OVERNIGHT	<input type="checkbox"/> CLIENT	<u>GC</u>	<u>10-30-00</u>
	<input type="checkbox"/> AIRBORNE	<input type="checkbox"/> GOLDENSTATE	<input type="checkbox"/> DHL		
	<input type="checkbox"/> UPS	<input type="checkbox"/> BAX GLOBAL	<input type="checkbox"/> GO-GETTERS		
	<input type="checkbox"/> STL COURIER	<input type="checkbox"/> B & B	<input type="checkbox"/> OTHER		
CUSTODY SEAL STATUS	<input checked="" type="checkbox"/> INTACT	<input type="checkbox"/> BROKEN	<input type="checkbox"/> N/A		
CUSTODY SEAL #(S)	<u>TAPE</u>				
SHIPPING CONTAINER(S)	<input type="checkbox"/> STL	<input checked="" type="checkbox"/> CLIENT	<input type="checkbox"/> N/A		
TEMPERATURE RECORD (IN °C)	IR	1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/>	<input type="checkbox"/> OTHER		
COC #(S)	<u>42801</u>				
TEMPERATURE BLANK					
AMBIENT TEMPERATURE	<u>3°</u>				
COLLECTOR'S NAME:	<input type="checkbox"/> Verified from COC	<input type="checkbox"/> Not on COC			
pH MEASURED	<input type="checkbox"/> YES	<input type="checkbox"/> ANOMALY	<input type="checkbox"/> N/A		
LABELED BY.....					
LABELS CHECKED BY.....					
SHORT HOLD TEST NOTIFICATION	SAMPLE RECEIVING				
	WETCHEM		<input type="checkbox"/> N/A		
<input type="checkbox"/> METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL			<input type="checkbox"/> N/A		
<input type="checkbox"/> COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES			<input type="checkbox"/> N/A		
<input type="checkbox"/> Clouseau	<input type="checkbox"/> TEMPERATURE EXCEEDED (2 °-6 °C)		<input checked="" type="checkbox"/> N/A	<u>GC</u>	<u>10-30-00</u>
<input checked="" type="checkbox"/> WET ICE	<input type="checkbox"/> BLUE ICE <input type="checkbox"/> GEL PACK				
<input type="checkbox"/> PM NOTIFIED	<input type="checkbox"/> NO COOLING AGENTS USED				

Notes: _____

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VOA	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
VOAn	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
AGB																				
AGBs																				
250AGB																				
250AGBs																				
250AGBn																				
250AGBna																				
AGJ																				
500AGJ																				
250AGJ																				
125AGJ																				
CGJ																				
500CGJ																				
250CGJ																				
125CGJ	1																			
PB/PJ																				
PBn/PJn																				
500PB/PJ																				
500PBn/PJn																				
500PBna																				
500PBzn/na																				
250PB																				
250PBn																				
250PBna																				
250PBzn/na																				
CT																				
Encore																				
Folder/Filter																				
PUF																				
Petri/Filter																				
XAD Trap																				
Ziploc																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

h = hydrochloric acid s = sulfuric acid na = sodium hydroxide n = nitric acid zn = zinc acetate

* Number of VOA's with air bubbles present / total number of VOA's

SOLID, 8280, Dioxins/Furans, HRGC/LRMS

RMT

Client Sample ID: DSL13

Trace Level Organic Compounds

Lot-Sample #....: G0J300145-001 Work Order #....: DN2TN2AC Matrix.....: SOLID
 Date Sampled....: 10/26/00 Date Received...: 10/30/00
 Prep Date.....: 11/09/00 Analysis Date...: 11/12/00
 Prep Batch #....: 0315502
 Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.045	ng/g	SW846 8280
Total TCDD	ND	0.045	ng/g	SW846 8280
1,2,3,7,8-PeCDD	ND	0.028	ng/g	SW846 8280
Total PeCDD	ND	0.028	ng/g	SW846 8280
1,2,3,4,7,8-HxCDD	ND	0.021	ng/g	SW846 8280
1,2,3,6,7,8-HxCDD	ND	0.018	ng/g	SW846 8280
1,2,3,7,8,9-HxCDD	ND	0.018	ng/g	SW846 8280
Total HxCDD	ND	0.018	ng/g	SW846 8280
1,2,3,4,6,7,8-HpCDD	ND	0.034	ng/g	SW846 8280
Total HpCDD	ND	0.034	ng/g	SW846 8280
OCDD	ND	0.096	ng/g	SW846 8280
2,3,7,8-TCDF	ND	0.051	ng/g	SW846 8280
Total TCDF	ND	0.051	ng/g	SW846 8280
1,2,3,7,8-PeCDF	ND	0.019	ng/g	SW846 8280
2,3,4,7,8-PeCDF	ND	0.017	ng/g	SW846 8280
Total PeCDF	ND	0.017	ng/g	SW846 8280
1,2,3,4,7,8-HxCDF	ND	0.016	ng/g	SW846 8280
1,2,3,6,7,8-HxCDF	ND	0.013	ng/g	SW846 8280
2,3,4,6,7,8-HxCDF	ND	0.015	ng/g	SW846 8280
1,2,3,7,8,9-HxCDF	ND	0.016	ng/g	SW846 8280
Total HxCDF	ND	0.013	ng/g	SW846 8280
1,2,3,4,6,7,8-HpCDF	ND	0.014	ng/g	SW846 8280
1,2,3,4,7,8,9-HpCDF	ND	0.018	ng/g	SW846 8280
Total HpCDF	ND	0.014	ng/g	SW846 8280
OCDF	ND	0.030	ng/g	SW846 8280

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	103	(40 - 120)
13C-2,3,7,8-TCDF	99	(40 - 120)
13C-1,2,3,6,7,8-HxCDD	96	(40 - 120)
13C-1,2,3,4,6,7,8-HpCDF	126 *	(40 - 120)
13C-OCDD	100	(40 - 120)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

* Surrogate recovery is outside stated control limits.

QC DATA ASSOCIATION SUMMARY

G0J300145

Sample Preparation and Analysis Control Numbers

<u>SAMPLE#</u>	<u>MATRIX</u>	<u>ANALYTICAL METHOD</u>	<u>LEACH BATCH #</u>	<u>PREP BATCH #</u>	<u>MS RUN#</u>
001	SOLID	SW846 8280		0315502	
	SOLID	ASTM D 2216-90		0306334	

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #....: G0J300145
MB Lot-Sample #: G0K100000-502

Work Order #....: DPPJV1AA

Matrix.....: SOLID

Analysis Date...: 11/11/00
Dilution Factor: 1

Prep Date.....: 11/09/00

Prep Batch #....: 0315502

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.037	ng/g	SW846 8280
Total TCDD	ND	0.037	ng/g	SW846 8280
1,2,3,7,8-PeCDD	ND	0.097	ng/g	SW846 8280
Total PeCDD	ND	0.097	ng/g	SW846 8280
1,2,3,4,7,8-HxCDD	ND	0.077	ng/g	SW846 8280
1,2,3,6,7,8-HxCDD	ND	0.064	ng/g	SW846 8280
1,2,3,7,8,9-HxCDD	ND	0.067	ng/g	SW846 8280
Total HxCDD	ND	0.064	ng/g	SW846 8280
1,2,3,4,6,7,8-HpCDD	ND	0.095	ng/g	SW846 8280
Total HpCDD	ND	0.095	ng/g	SW846 8280
OCDD	ND	0.11	ng/g	SW846 8280
2,3,7,8-TCDF	ND	0.057	ng/g	SW846 8280
Total TCDF	ND	0.057	ng/g	SW846 8280
1,2,3,7,8-PeCDF	ND	0.036	ng/g	SW846 8280
2,3,4,7,8-PeCDF	ND	0.033	ng/g	SW846 8280
Total PeCDF	ND	0.033	ng/g	SW846 8280
1,2,3,4,7,8-HxCDF	ND	0.039	ng/g	SW846 8280
1,2,3,6,7,8-HxCDF	ND	0.031	ng/g	SW846 8280
2,3,4,6,7,8-HxCDF	ND	0.038	ng/g	SW846 8280
1,2,3,7,8,9-HxCDF	ND	0.039	ng/g	SW846 8280
Total HxCDF	ND	0.031	ng/g	SW846 8280
1,2,3,4,6,7,8-HpCDF	ND	0.073	ng/g	SW846 8280
1,2,3,4,7,8,9-HpCDF	ND	0.094	ng/g	SW846 8280
Total HpCDF	ND	0.073	ng/g	SW846 8280
OCDF	ND	0.061	ng/g	SW846 8280

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	105	(40 - 120)
13C-2,3,7,8-TCDF	102	(40 - 120)
13C-1,2,3,6,7,8-HxCDD	45	(40 - 120)
13C-1,2,3,4,6,7,8-HpCDF	60	(40 - 120)
13C-OCDD	95	(40 - 120)

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #....: G0J300145 Work Order #....: DPPJV1AC Matrix.....: SOLID
 LCS Lot-Sample#: G0K100000-502
 Prep Date.....: 11/09/00 Analysis Date...: 11/11/00
 Prep Batch #....: 0315502
 Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCENT RECOVERY</u>	<u>METHOD</u>
2,3,7,8-TCDD	2.50	2.68	ng/g	107	SW846 8280
1,2,3,7,8-PeCDD	6.25	6.21	ng/g	99	SW846 8280
1,2,3,6,7,8-HxCDD	6.25	6.09	ng/g	97	SW846 8280
1,2,3,4,6,7,8-HpCDD	6.25	6.68	ng/g	107	SW846 8280
OCDD	12.5	13.3	ng/g	107	SW846 8280
2,3,7,8-TCDF	2.50	2.59	ng/g	104	SW846 8280
1,2,3,7,8-PeCDF	6.25	7.16 a	ng/g	115	SW846 8280
1,2,3,6,7,8-HxCDF	6.25	5.29	ng/g	85	SW846 8280
1,2,3,4,6,7,8-HpCDF	6.25	5.34	ng/g	86	SW846 8280
OCDF	12.5	13.6	ng/g	109	SW846 8280

<u>INTERNAL STANDARD</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	109	(40 - 120)
13C-2,3,7,8-TCDF	110	(40 - 120)
13C-1,2,3,6,7,8-HxCDD	110	(40 - 120)
13C-1,2,3,4,6,7,8-HpCDF	128 *	(40 - 120)
13C-OCDD	105	(40 - 120)

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #....: G0J300145 Work Order #....: DPPJV1AC Matrix.....: SOLID
 LCS Lot-Sample#: G0K100000-502
 Prep Date.....: 11/09/00 Analysis Date...: 11/11/00
 Prep Batch #....: 0315502
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
2,3,7,8-TCDD	107	(70 - 115)	SW846 8280
1,2,3,7,8-PeCDD	99	(71 - 116)	SW846 8280
1,2,3,6,7,8-HxCDD	97	(78 - 116)	SW846 8280
1,2,3,4,6,7,8-HpCDD	107	(73 - 121)	SW846 8280
OCDD	107	(74 - 112)	SW846 8280
2,3,7,8-TCDF	104	(76 - 108)	SW846 8280
1,2,3,7,8-PeCDF	115 a	(73 - 112)	SW846 8280
1,2,3,6,7,8-HxCDF	85	(68 - 119)	SW846 8280
1,2,3,4,6,7,8-HpCDF	86	(72 - 110)	SW846 8280
OCDF	109	(73 - 110)	SW846 8280

<u>INTERNAL STANDARD</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	109	(40 - 120)
13C-2,3,7,8-TCDF	110	(40 - 120)
13C-1,2,3,6,7,8-HxCDD	110	(40 - 120)
13C-1,2,3,4,6,7,8-HpCDF	128 *	(40 - 120)
13C-OCDD	105	(40 - 120)

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

SOLID, D 2216-90, Moisture, Percent

RMT

Client Sample ID: DSL13

General Chemistry

Lot-Sample #...: G0J300145-001
Date Sampled...: 10/26/00

Work Order #...: DN2TN
Date Received...: 10/30/00

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	19.6	0.10	%	ASTM D 2216-90	10/31-11/01/00	0306334

Dilution Factor: 1